



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/625,844	07/24/2003	Munetaka Takahashi	052218-0111	8934

22428 7590 09/15/2005

FOLEY AND LARDNER
SUITE 500
3000 K STREET NW
WASHINGTON, DC 20007

EXAMINER

GREENE, DANIEL LAWSON

ART UNIT	PAPER NUMBER
----------	--------------

3663

DATE MAILED: 09/15/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/625,844

Applicant(s)

TAKAHASHI, MUNETAKA

Examiner

Daniel L. Greene Jr.

Art Unit

3663

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 29 June 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-9 and 11 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-9 and 11 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 08 December 2004 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
- ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: _____.

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 6/2/2005 has been entered.

Drawings

2. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the wall of the suppression pool that is continuous to the inner surface of the upper drywell must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering

of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claims 1-9 and 11 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

- a. There is no proper antecedent basis for all terms present. See for example "one main steam pipe", "the first side of the reactor containment", "the inner surface of the upper drywell", "the distance between an outer surface" and "a distance between the outer surface" (underlining added to show multiple improper antecedents) in claim 1, "the first axis" and "the second axis" in claim 2 (are these the same as the horizontal axis?), "the first side of the reactor containment" in claim 6, "the second side of the reactor containment vessel" in claims 7 and 9, etc.
- b. Claim 1 is vague, indefinite and incomplete in what all is meant by and encompassed by the phrase "the suppression pool having a wall which is

continuous to the inner surface of the upper drywell". Applicant's 6/2/2005 amendment added this limitation however the phrase having a wall which is continuous to the inner surface of the upper drywell does not connote any particular structure, per se. The claim does not particularly point out how and in what manner the wall is "continuous", hence the metes and bounds of the claim are undefined.

c. Claim 1 is vague, indefinite and incomplete in what all is meant by and encompassed by the limitation "wherein the distance between an outer surface of the reactor pressure vessel and the inner surface of the first side is longer than a distance between the outer surface and the inner surface on the second side". The limitations "an outer surface" and "a distance" do not particularly point out and distinctly claim exactly how and in what manner said surface or distance is defined. In fact, the current wording of this claim reads directly on any one single point on the outer surface of the prior art in Figure 5, since measuring the distance between the walls on opposite sides of the reactor containment vessel and that one single point would inherently have one distance longer than the other, hence the metes and bounds of the claim are undefined.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the

Art Unit: 3663

invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1-3, 6-9 and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over applicant's own admission of prior art Figures 5 and 6 in view of any of either the 1964 Proceedings of the Third International Conference on the Peaceful Uses of Atomic Energy, Small and Medium Power Reactors Vol. 1, pages 78, and 330-333 published 1961 or U.S. Patent 4,213,824 to Jabsen.

Applicants own admission of prior art (APA) figures 5 and 6 disclose a reactor containment vessel (2) configured to contain a reactor pressure vessel (1) directly connected to at least one main steam pipe (4), the reactor containment vessel comprising:

(a) an upper drywell (3) a first side and a second side which is opposite to the first side, the first side having an inner surface, the second side having an inner surface; a main-steam-line penetration point (8) disposed on the first side of the reactor containment vessel (1), wherein the at least one main steam pipe (4) of the boiling water reactor penetrates the reactor containment vessel at the main-steam-line penetration point (8) and

(b) a suppression pool (12) of annular shape horizontally surrounding the reactor pressure vessel (1) the suppression pool being disposed under the upper drywell (3), the suppression pool having a wall which is continuous to the inner surface of the upper drywell, however prior art figures 5 and 6 do not expressly disclose that the distance between an outer surface of the reactor pressure vessel (1) and the inner surface of the first side is longer than a distance between

the outer surface and the inner surface of the reactor containment vessel (1) the on a second side, i.e. that the reactor is offset in a particular direction.

The secondary references teach it is old and well known in the nuclear art to alter the design of the reactor containment vessel for a variety of reasons and benefits such as:

- a. In the 1964 Proceedings of the Third International Conference on the Peaceful Uses of Atomic Energy pages 362 and 363, Figure 3 and the second column, section labeled "Pressure suppression containment" wherein it is clearly shown and taught that the reactor is off center and that "Additional advantages can be claimed for the pressure suppression concept if the various components of the system are suitably arranged. The compact design of the entire system makes it suitable for underground use..."),
- b. Small and Medium Power Reactors Vol. 1, pages 78, and 330-333 published 1961, teach it is not only well known in the nuclear art, but conventional to offset reactors (page 330 description of reactor auxiliary building" and "A compact arrangement is employed with major items of equipment set vertically to minimize the volume and diameter of the building" (underlining added)
- c. Jabsen, column 3 lines 24-33 also teaches it is old, well known, and **typical** to offset the centerline of the reactor pressure vessel and reactor

containment in order to facilitate the location of auxiliary equipment in the drywell.

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to alter the location of the reactor pressure vessel of the system shown in APA Figures 5 and 6 to gain the advantages therefrom (i.e. increasing spatial access for maintenance on the main steam isolation valves, compact design, complete containment shielding, etc.,) as such results are in no more than the use of conventional and typical designs and layouts well known within the art.

With regard to claim 2, "1964 Proceedings" and "Small and Medium" teach it is old and well known to vary the shapes of reactor containment vessels, it would have been obvious at the time the invention was made, to alter the shape of the APA reactor containment vessel to a non-circular horizontal cross-sectional shape in order to gain the advantages thereof (i.e. allowing the reactor containment vessel to be installed immediately adjacent to two existing oil-fired units, minimizing expense by compact design, etc.,) as such results are in no more than the use of conventionally known typical shapes, designs and layouts available within the art in the rejection of corresponding parts above.

With regard to claim 3, APA figure 6 clearly shows a lower drywell (11) disposed below the reactor pressure vessel (1); and a wet well (22/14) horizontally surrounding the lower drywell; wherein the suppression pool of annular shape (22/14) is contained in the wet well.

Regarding claim 6, APA figure 6 further discloses the reactor containment vessel according to Claim 1, further comprising a feed water pipe connected to the reactor pressure vessel; and a feed-water-line penetration point; wherein the feed water pipe penetrates the reactor containment vessel at a feed-water-line penetration point, the feed-water-line penetration point is disposed on the first side of the reactor containment vessel, and the main-steam-line penetration point and the feed- water-line penetration point are arranged in substantially a same level, wherein it is understood that the definition of substantially a same level is broad enough to include that same level shown in Figure 6 of APA since both the main-steam-line penetration point and the feed- water-line penetration point are arranged on the same floor (or level of the reactor compartment).

In regard to Claim 7, APA figure 6 further discloses a lower drywell disposed below the reactor pressure vessel; a wet well horizontally surrounding the lower drywell; wherein the suppression pool is contained in the wet well; an access tunnel (13) penetrating the suppression pool, wherein the access tunnel (13) is able to communicate between the lower drywell and the outside of the reactor containment vessel on the second side of the reactor containment vessel in the rejection of corresponding parts above.

In regard to claim 8, it would have been obvious at the time the invention was made, that rearranging the various components within the reactor containment vessel would also affect the relationships and locations of other components. As explained above (see, for example Jabsen Figure 2), it is

apparent on the face that when moving the reactor pressure vessel, the thickness of one side of the suppression pool must obviously be made smaller, while the other side is made larger, in order to maintain the total volume of said suppression pool in the rejection of corresponding parts above. Because of the geometry and location of the larger amount of quench volume, in order to maintain the same total flow capacity of the vent pipes, it would have been obvious to bias the distribution and placement of these pipes towards the larger quench volume and thus the first side of the reactor containment vessel.

In regard to claim 9, APA figure 6 further discloses a fuel storage pool (16) disposed on the second side of the reactor containment vessel in the rejection of corresponding parts above.

In regard to claim 11, as discussed above, moving the reactor pressure vessel (with a first circular horizontal cross-sectional shape) to a location other than the geometric center of the reactor containment vessel (with a second circular horizontal cross sectional shape), as taught to be "typical" for the advantages thereof (i.e. increasing spatial access for maintenance on the main steam isolation valves, compact design, complete containment shielding, facilitating locations of auxiliary equipment in the dry well, etc.,) would obviously cause the reactor containment vessel's second circular horizontal cross sectional shape to eccentrically surround the first circular horizontal cross-sectional shape.

5. Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over APA Figures 5 and 6 in view of any of either the 1964 Proceedings of the Third International Conference on the Peaceful Uses of Atomic Energy, Small and Medium Power Reactors Vol. 1, pages 78, and 330-333 published 1961 or U.S. Patent 4,213,824 to Jabsen as applied to claims 1-3, 6-9 and 11 and further in view of either U.S. Patent 3,715,270 to Jackson or U.S. Patent 3,318,780 to Bohmann et al.

If applicant is not of the opinion that it would have been obvious to rearrange the reactor containment vessel in the manner described in section 4 above then Jackson (see, for example, Figures 2 and 3) and Bohmann et al. (see, for example, Figures 1, 2 and 4) disclose reactor containment vessels with non-circular horizontal cross-sectional shape.

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to change the shape of the reactor containment vessel of the system shown in APA Figures 5 and 6 to gain the advantages therefrom (i.e. cost reduction by reducing size, promoting compact design, ability to utilize an average gantry crane, resistance to outward overpressure, etc.) as such results are no more than a design choice of those conventionally known designs and shapes available within the art.

Note also that statements as to possible future acts or to what the reactor containment vessel may enclose are essentially method limitations or statements of intended or desired use and do not serve to patentable distinguish the claimed structure

Art Unit: 3663

over that of the reference. See In re Pearson, 181 USPQ; In re Yanush, 177 USPQ 705; In re Finsterwalder, 168 USPQ 530; In re Casey, 152 USPQ 235; In re Otto, 136 USPQ 458; Ex parte Masham, 2 USPQ 2nd 1647.

See MPEP 2114, which states:

A claim containing a "recitation with respect to the manner in which a claimed apparatus is intended to be employed does not differentiate the claimed apparatus from a prior art apparatus" if the prior art apparatus teaches all the structural limitations of the claim. Ex parte Masham, 2 USPQ2d 1647

Claims directed to an apparatus must be distinguished from the prior art in terms of structure rather than functions. In re Danly, 120 USPQ 528, 531

Apparatus claims cover what a device is, not what a device does. Hewlett-Packard Co. v Bausch & Lomb Inc., 15 USPQ2d 1525, 1528

As set forth in MPEP 2115, a recitation in a claim to the material or article worked upon does not serve to limit an apparatus claim.

In this regard the reactor containment vessel of Jackson is obviously capable of being used for a boiling water reactor, as this is no more than conventionally known uses for structures, designs and shapes available within the art.

6. Claims 4-6 are rejected under 35 U.S.C. 103(a) as being unpatentable over APA Figures 5 and 6 in view of any of either the 1964 Proceedings of the Third International Conference on the Peaceful Uses of Atomic Energy, Small and Medium Power Reactors Vol. 1, pages 78, and 330-333 published 1961 or U.S. Patent 4,213,824 to Jabsen as applied to claims 1-3, 6-9 and 11 and further in view of U.S. Patent 4,687,625 to Hasegawa et al. hereafter Hasegawa

APA figures 5 and 6 as previously modified above disclose the invention substantially as claimed, however they do not expressly disclose an air conditioner for the reactor containment vessel disposed outside of said reactor containment vessel.

Hasegawa teaches that it is known to have an air conditioner outside of the reactor containment vessel and the air conditioner ventilation piping (duct) to have an isolation valve in column 1 lines 22-27, column 5 lines 42+ and column 6 lines 1-6.

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to locate the air conditioner for the reactor containment vessel outside of the reactor containment vessel and for the air conditioner duct to include an isolation valve to gain the advantages therefrom (i.e. minimizing costs by minimizing size of the reactor containment vessel by moving components outside of said reactor containment vessel,) as such results are in no more than a rearrangement of parts of the conventionally known designs and locations of components available within the art.

Note that MPEP 2144 states that a making separable, rearrangement of parts, duplication of parts and/or changing the shape does not make an invention patentably distinct. See *In re Dulberg*, 289 F.2d 522, 523, 129 USPQ 348, 349 (CCPA 1961), *In re Japikse*, 181 F.2d 1019 86 USPQ 70 (CCPA 1950) and *In re Kuhle*, 526 F.2d 553, 188 USPQ 7 (CCPA 1975), *In re Harza*, 274 F.2d 669, 124 USPQ 378 (CCPA 1960), *In re Dailey*, 357 F.2d 669, 149 USPQ 47 (CCPA 1966)

In regard to claim 6, Hasegawa further discloses the advantages of having the feed-water-line penetration point and the main-steam-line penetration point arranged substantially at the same level in Figures 1,2 and 6, column 3 lines 27-39, column 4 lines 21-27, column 5 lines 42+ and column 6 lines 1-6.

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to locate the feed-water-line penetration point and the main-steam-line penetration point arranged substantially in the same level to gain the advantages therefrom (i.e. minimize costs by utilizing one isolating vessel for multiple penetrations) as such results are in no more than a rearrangement of parts of the conventionally known designs and locations of components available within the art. See *In re Japikse*, 181 F.2d 1019 86 USPQ 70 (CCPA 1950) and *Ex parte Chicago Rawhide MFG. Co.*, 223 USPQ 351, 353 (Bd. Pat. App & Inter. 1985)

7. Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over APA Figures 5 and 6 in view of any of either the 1964 Proceedings of the Third International Conference on the Peaceful Uses of Atomic Energy, Small and Medium Power Reactors Vol. 1, pages 78, and 330-333 published 1961 or U.S. Patent 4,213,824 to Jabsen as applied to claims 1-3, 6-9 and 11 and further in view of U.S. Patent 5,149,492 to Arai et al.

Arai discloses the invention substantially as claimed as well as distributing the vent pipe (8) to the first side of the reactor.

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to distribute the vent pipes biased towards the side with the larger volume of water to gain the advantages therefrom (i.e. maximize exposure to the largest source of cooling water) as such results are in no more than a rearrangement of parts of the conventionally known designs and locations of components available within the art. See *In re Japikse*, 181 F.2d 1019 86 USPQ 70 (CCPA 1950) and *Ex parte Chicago Rawhide MFG. Co.*, 223 USPQ 351, 353 (Bd. Pat. App & Inter. 1985)

Response to Arguments

8. Applicant's 6/2/2005 arguments spanning pages 5 and 6 are unpersuasive as applicant has not shown that the references do not teach what the examiner has stated they teach, nor has applicant shown that the examiner's reasoning for and manner of combining the teachings of the references is improper or invalid.

Applicant's statement that "it would have been natural to one skilled in the art to have arranged the reactor pressure vessel coaxial with a cylindrical reactor" does not negate the fact that those in the nuclear art are well aware that it is "typical" to arrange the reactor pressure vessel in other fashions such as shown in, for example, the drawings. It is not a matter of what applicant feels is "natural" it is a matter of whether or not those in the nuclear art know of and are aware of the ideas presented. The examiner has shown that not only are those

in the nuclear art well aware of the "idea" of placing the centerline of the pressure vessel off center with the containment vessel, but that this is "typically" done in order to facilitate the location of auxiliary equipment in the dry well.

The Bohmann and Jabsen references have been added to the rejection of applicant's invention as further evidence that it is well known in the industry to vary the shape, design and layout of nuclear reactor containment vessels.

Conclusion

9. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure as further evidence that those in the nuclear art are fully aware of placing reactors off center of their reactor containment vessels, varying the shape of said containment vessels and rearranging the parts of the nuclear system for various reasons.

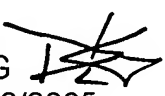
10. Examiner's Note: Examiner has cited particular columns and line numbers in the references as applied to the claims for the convenience of the applicant. Although the specified citations are representative of the teachings in the art and are applied to the specific limitations within the individual claim, other passages and figures may apply as well. It is respectfully requested from the applicant, in preparing the responses, to fully consider the references in entirety as potentially teaching all or part of the claimed invention, as well as the context of the passage as taught by the prior art or disclosed by the examiner.

Art Unit: 3663

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Daniel L. Greene Jr. whose telephone number is (571) 272-6876. The examiner can normally be reached on Mon-Fri 8:30am - 5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jack Keith can be reached on (571) 272-6878. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

12. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

DIG 
9/12/2005


JACK KEITH
PRIMARY EXAMINER
SPE 3663